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THE MARKET FOR COMPUTER-RELATED PRODUCTS AND SERVICES IN THE COMPUTER SERVICES INDUSTRY

Final Report

Prepared for IBM

INPUT®

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Background and Methodology

Background and Methodology

A

Background

IBM's Computer Service Industry group engaged INPUT to identify the size and characteristics of the market opportunity for providing computer services to the computer service industry itself.

For the purposes of this study, the computer service industry was broken into the following five delivery mode categories: (Definitions are in Appendix A.)

- Software Products
- Professional Services/Systems Integration
- Processing Services/Systems Operations
- Network Services
- Turnkey

Note: For the purposes of this study, firms that were primarily focused on the federal market were excluded. This primarily affected the professional services/systems integration and processing services/systems operations categories; approximately fifty sizable firms were affected.

Each delivery mode was further segmented by size:

- Small ($1-20 million in revenue)
- Medium ($20-100 million)
- Large (Over $100 million)

INPUT proposed, and IBM accepted, that a representative sample of computer service companies be interviewed to learn:

- Their external spending on computer services and products (excluding that passed on to customers)

- Changes from 1989 to 1990 and changes expected in 1990-1991
- The importance of individual acquisition criteria, including:
  - Price
  - Product features/vendor qualifications
  - Delivery time
  - Reliability
  - Serviceability
  - Vendor reputation
  - Dealing with a full service vendor
  - Importance of the business relationship
  - Terms and conditions
  - Importance of dealing with the latest technology

B Methodology

INPUT developed a questionnaire to be administered by telephone; IBM made suggestions and modifications. The questionnaire was tested and further modified. The final questionnaire is in Appendix B.

INPUT and IBM developed a list of target companies to be interviewed. Interviews were conducted in February and March 1991. Interviewees were typically managers responsible for providing internal systems services. In some large companies, there were specialists in charge of acquiring outside products and services. In many smaller companies, INPUT spoke to senior executives of the firm.

Ultimately, INPUT interviewed 146 companies, distributed as shown in Exhibit I-1. The actual companies interviewed are listed in Exhibit I-2. Companies were generally cooperative, although there was often delay in finding a person who was both knowledgeable and authorized to release such information. As an incentive to take part, INPUT promised respondents a summary of findings (to be reviewed with IBM before being dispatched). In addition, about 20% of respondents felt that enough of their answers represented potentially proprietary data; their identities have been masked where details have been reported.

INPUT provided early, partial results of the data to IBM in the second week of March 1991. A preliminary full set of results was reviewed with IBM on April 18, 1991. Further analysis was performed and a draft final copy of the detailed and summarized data was forwarded to IBM during the last week in April, along with completed copies of the actual questionnaires.

This report provides a self-contained summary of the information previously provided and is identical in content to the data provided the last week in April.

EXHIBIT I-1

Interview Sample Distribution

Company Type	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Total
Software Products	17	11	9	37
Professional Services/ Systems Integration*	19	7	14	40
Processing Services/ Systems Operations*	6	6	8	20
Network Services	7	6	8	21
Turnkey	14	8	6	28
Total	63	38	45	146

- Includes Divisions
- Classified by primary business

* Excludes federally oriented companies

As part of the last round of reviews, INPUT and IBM agreed that market sizing should exclude the market opportunity for IBM represented by hardware manufacturers, since a great deal of this would not be realistically available to IBM. The impact of this exclusion varied by the type of delivery mode.

- Hardware manufacturers are significant factors in software products.
- Hardware manufacturers have some impact in professional services/ systems integration and processing services/systems operations.
- Hardware manufacturers have a negligible effect on network services and turnkey systems.

EXHIBIT I-2a

Software Companies Interviewed

Company Name

- A/E Microsystems, Inc.
- Advanced Program Xchange Labs
- Aries Software Corp.
- Arkansas Systems, Inc.
- Ashton-Tate Corporation
- Automatix, Inc.
- Avatar Corporation
- Beall Technologies, Inc.
- BGS Systems Inc.
- Boole & Babbage, Inc.
- Caelus Associates
- Central Point Software, Inc.
- Cincom Systems, Inc.
- Cognitive Systems, Inc.
- Columbine Systems, Inc.
- Computer Corporation of America
- Datalex Inc.
- Digital Research, Inc.
- Gifford Fong Associates
- Informix Software, Inc.
- Insurance Automation Systems Inc.
- Integral Systems, Inc.
- Landmark Systems Corporation
- LEGENT Corporation
- MUST Software International
- ProfitKey International
- Progress Software Corporation
- Promod, Inc.
- Quorum Legal Systems (Division of Control Data Corp.)
- Ross Systems, Inc.
- SAS Institute Inc.
- Saylor's Software
- Software Publishing Corporation
- Symantec Corporation
- System Software Associates, Inc.
- WordPerfect Corporation

EXHIBIT I-2b

Systems Operations Companies Interviewed

Company Name

- Advanced Data Systems, Inc.
- Amdahl Corporation
- Analysts International Corporation
- Boeing Computer Services Co.
- Booner & Moore
- Brandon Systems Corporation
- CCH Computax
- Cincinnati Bell Inc.
- Computil
- DST Systems, Inc.
- DHI Computing Service, Inc.
- Digital Sound Corporation
- ESI/AZTECH
- Managestics
- NCR (Data Services)
- Reuter, Inc.
- Saztec International, Inc.
- SCS/Compute, Inc.
- SEI Corporation
- Syscon Corporation

EXHIBIT I-2c

Professional Services Companies Interviewed

Company Name

- AGS Computers, Inc.
- American Computer Professionals, Inc.
- American Digital Systems, Inc.
- American Management Systems, Inc.
- Analytic MicroSystems, Inc.
- Applied Data Systems
- Applied Solutions, Inc.
- Arthur Andersen & Co.
- AT&T
- Atlantic Data Services, Inc.
- Below, Tobe & Associates, Inc.
- Bendata Management Systems, Inc.
- Berger & Company
- CACI, Inc.
- CAP Gemini America
- Cimflex Teknowledge Corp.
- Comp-U-Staff Inc.
- Compudata, Inc.
- Computer Data Systems, Inc.
- Computer Sciences Corporation
- Computer Task Group, Inc.
- Computing Analysis
- Contel Corporation
- CTRL Systems Inc.
- G.E. Consulting
- Gracon Services
- Heuristima Corporation
- Integrated Microcomputer Systems Inc.
- ITP Boston, Inc.
- Keane, Inc.
- Logica Data Architects
- NUS Corporation
- Network Management, Inc.
- Systems Integrators
- Technalysis Corporation
- Tele/Scope
- Xpedite Systems, Inc.

EXHIBIT I-2d

Network Services Companies Interviewed

Company Name

- 3Com Corporation
- Acxiom Corporation
- Arbitron Company
- BT North America
- CUC International Inc.
- Cylix Communications
- Dowty Communications
- GE Information Services
- GeoNet, Inc.
- Graphnet, Inc.
- Harbinger EDI Services
- Interactive Data Corporation
- Maxwell Online, Inc.
- Merchant Technical
- Omnet Inc.
- OTC Australia
- Simpact Associates, Inc.
- Thomson's Financial Network
- Transettlements, Inc.
- Transnet - MIS Group
- TRT/FTC Communications, Inc.

EXHIBIT I-2e

Turnkey Companies Interviewed

Company Name

- 3M Health Information Systems Dept.
- Accugraph Corp.
- Agency Management Services, Inc.
- Auto Tell Services, Inc.
- CAD-Tel Systems, Inc.
- Computer Consoles, Inc.
- Effective Management Systems, Inc.
- Evans & Sutherland Computer Corp.
- GeoQuest Systems, Inc.
- Global Turnkey Systems, Inc.
- Habersham Banking Solutions, Inc.
- Hughes Network Systems, Inc.
- Intergraph Corporation
- Itron, Inc.
- J.E. Gould Co.
- Jack Henry & Associates, Inc.
- Microdynamics, Inc.
- National Distributor Systems
- OST, Inc.
- Pentamation Enterprises, Inc.
- Pin - Directions
- Redshaw Inc.
- Reynolds and Reynolds Co.
- Schlumberger CAD/CAM
- Speech Systems, Inc.
- Votan
- Xyvision, Inc.

Market Summaries

Market Summaries

A

The Scope of the Market

There are over 11,000 information services vendors active in the U.S. (Exhibit II-1).

- This particular exhibit excludes hardware manufacturers and federally oriented companies:
  - About 200 medium and large companies are excluded and about the same number of small companies
  - There is a small amount of double counting where the same firm is active in more than one area. However, there is little overlap in the medium and large firm sectors.
  - In some cases vendors are divisions of larger entities. However, this generally has little effect on a firm's behavior and should not be a factor in this study.

The total revenues of these firms are shown in Exhibit II-2:

- Note that the small software vendors nearly equal the large vendors. (However, with hardware manufacturers included, the large category would be over twice as large.)
- Note the disproportionate share held by large network service companies.
- Overall, small firms account for about one-third of the market.

Exhibit II-2 is a key exhibit: The size of the market available to IBM was derived from applying the percent of revenues spent on outside services to these revenue totals.

EXHIBIT II-1

Number of U.S. Information Services Vendors—1990 (Excluding Hardware Manufacturers)

Company Type	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Total
Software Vendors	2,900	56	35	2,991
Professional Services/ Systems Integration*	3,500	46	22	3,568
Processing Services/ Systems Operations*	1,800	43	22	1,865
Network Services	500	18	18	536
Turnkey	2,500	40	16	2,556
Total	11,200	203	113	11,516

- Includes Divisions
- Classified by primary business
- * Excludes federally oriented companies

EXHIBIT II-2

Total Revenues of U.S. Information Services Vendors—1990 ($ Billions) (Excluding Hardware Manufacturers)

Company Type	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Total
Software Vendors	10.2	3.0	12.9	26.1
Professional Services/ Systems Integration*	5.3	1.8	10.1	17.2
Processing Services/ Systems Operations*	6.3	2.5	13.4	22.2
Network Services	0.9	0.9	6.3	8.1
Turnkey	5.3	2.2	2.8	10.3
Total	28.0	10.4	45.5	83.9

- Includes Divisions
- Classified by primary business

* Excludes federally oriented companies

B

Potential Market Sizes

Exhibit II-3 shows that the total market for computer-related products and services was $5 billion in 1990.

EXHIBIT II-3

1990 Market for Computer-Related Products and Services: All Information Services Firms (Excluding Hardware Manufacturers and Federally Oriented Vendors) ($ Millions)

Product/ Service	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Total
Computer Systems	760	243	1,017	2,020
Software Products	256	78	106	440
Professional Services	722	26	286	1,034
Other	456	230	830	1,516
Total	2,194	577	2,239	5,010

- The small and large company categories each amount to about 45% of the total market.
- The "other" category is mainly for services not generally offered by IBM; the main component is telecommunications services.
- Consequently, the market available to IBM is approximately $3.5 billion. Computer systems account for over half of that amount.

Exhibit II-4 shows the market broken down by type of vendor: software product and processing services/systems operations vendors account for almost three-quarters of the market.

EXHIBIT II-4

1990 Market for Computer-Related Products and Services by Type of Vendor (Excluding Hardware Manufacturers and Federally Oriented Vendors)

Vendor Type	Market Size	
	$ Billions	Percent
Software Vendor	1.681	33
Professional Services/ Systems Integration	0.240	5
Processing Services/ Systems Operations	2.045	41
Network Services	0.351	7
Turnkey Systems	0.693	14
Total	5.010	100

Exhibits II-5 through II-9 summarize the product/service requirements for each of the five vendor/size segments.

EXHIBIT II-5

1990 Market for Computer-Related Products and Services: Software Vendors (Excluding Hardware Manufacturers) ($ Millions)

Product/ Service	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Total
Computer Systems	469	33	142	644
Software Products	20	24	13	57
Professional Services	581	3	39	623
Other	163	78	116	357
Total	1,233	138	310	1,681

EXHIBIT II-6

1990 Market for Computer-Related Products and Services: Professional Services/Systems Integration (Excluding Hardware Manufacturers and Federally Oriented Vendors) ($ Millions)

Product/ Service	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Total
Computer Systems	46	9	40	95
Software Products	10	4	10	24
Professional Services	36	*	10	46
Other	26	9	40	75
Total	118	22	100	240

* Negligible

EXHIBIT II-7

1990 Market for Computer-Related Products and Services: Processing Services/Systems Operations (Excluding Hardware Manufacturers and Federally Oriented Vendors) ($ Millions)

Product/ Service	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Total
Computer Systems	57	153	764	974
Software Products	38	38	67	143
Professional Services	25	15	228	268
Other	76	88	496	660
Total	196	294	1,555	2,045

EXHIBIT II-8

**1990 Market for Computer-Related Products and Services:
Network Services
($ Millions)**

Product/ Service	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Total
Computer Systems	34	8	57	99
Software Products	8	5	13	26
Professional Services	22	1	6	29
Other	32	7	158	197
Total	96	21	234	351

EXHIBIT II-9

**1990 Market for Computer-Related Products and Services:
Turnkey Systems
($ Millions)**

Product/ Service	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Total
Computer Systems	154	40	14	208
Software Products	180	7	3	190
Professional Services	58	7	3	68
Other	159	48	20	227
Total	551	102	40	693

Interview Findings (Summary)

Interview Findings (Summary)

This chapter summarizes the principal findings of the interviews with each of the five vendor types. There are three exhibits for each vendor type:

- The first exhibit shows spending on external computer-related products and services as a percent of 1990 revenues. The averages for each cell are medians, to exclude the effect of "outliers" (i.e., figures far above or below average). The average for each spending category is an unweighted average and is for comparative information purposes only. This average was not used to compute market sizes—these totals were built up from each cell.

- The second exhibit in each group shows the percentage change from 1989 to 1990, and the expected changes from 1990 to 1991.

  - These percents are probably the most "fragile" numbers in the survey, since in many cases respondents did not have precise or equivalent numbers to make comparisons for changes from 1989 to 1990.

  - The small companies, especially, may have been influenced somewhat by being interviewed during a recessionary period; some respondents' interviews occurred during the shooting part of the Gulf War.

  - Acquisition criteria ratings are contained in the third exhibit of each group.

The exhibits are grouped as follows:

Vendor Type	Exhibit Numbers
Software Products	III-1 to III-3
Professional Services/ Systems Integration	III-4 to III-6
Processing Services/ Systems Operations	III-7 to III-9
Network Services	III-10 to III-12
Turnkey	III-13 to III-15

EXHIBIT III-1

Software Product Vendors
1990 External Spending As a Percent of Revenues

Spending Category	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
Computer Systems	4.6	1.1	1.1	2.3
Software Products	0.2	0.8	0.1	0.4
Professional Services	5.7	0.1	0.3	2.0
Other	1.6	2.6	0.9	1.6
Total External Spending	12.1	4.6	2.4	6.2

Companies Interviewed: 37
Note: Sum of individual entries may not total due to rounding
* Unweighted average

EXHIBIT III-2

Software Product Vendors
Percent Change in Outside Spending
(Total)

Period	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
1989 to 1990	+0.6	+28.3	+24.1	+17.7
1990 to 1991	-1.6	+10.3	+21.4	+10.0

* Unweighted average

EXHIBIT III-3

Software Product Vendors Acquisition Criteria Rating

Criteria	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
Price	3.8	3.9	3.4	3.7
Features/ Qualifications	4.4	4.5	4.6	4.5
Delivery Time	3.2	2.9	2.6	2.9
Reliability	4.4	4.5	3.9	4.3
Service-ability	3.5	4.5	3.6	3.9
Reputation	3.6	3.8	3.8	3.7
Full-Service Vendor	2.7	3.2	2.2	2.7
Business Relationship	2.9	2.6	3.8	3.1
Terms and Conditions	3.2	3.0	3.0	3.1
Latest Technology	3.9	3.8	4.0	3.8

Key: 1 = Low importance, 5 = High importance

Comments

- Ratings of 4.0 or higher indicate a high degree of importance
- Criteria receiving ratings under 3.0 can generally be ignored

* Unweighted average

EXHIBIT III-4

Professional Services/Systems Integration Vendors (Excluding Federal)
1990 External Spending As a Percent of Revenues

Spending Category	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
Computer Systems	0.9	0.5	0.4	0.6
Software Products	0.2	0.2	0.1	0.2
Professional Services	0.7	**	0.1	0.2
Other	0.5	0.5	0.4	0.5
Total External Spending	2.3	1.4	0.9	1.5

Companies Interviewed: 40
Note: Sum of individual entries may not total due to rounding
* Unweighted average
** Negligible

EXHIBIT III-5

Professional Services/Systems Integration Vendors (Excluding Federal) Percent Change in Outside Spending (Total)

Period	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
1989 to 1990	+1.2	+55.8	+15.4	+24.1
1990 to 1991	+13.4	+16.7	+10.1	+13.4

* Unweighted average

EXHIBIT III-6

Professional Services/Systems Integration Vendors (Excluding Federal) Acquisition Criteria Rating

Criteria	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
Price	4.4	3.9	4.1	4.1
Features/ Qualifications	4.7	4.3	4.3	4.4
Delivery Time	2.9	3.4	2.9	3.1
Reliability	4.8	4.7	4.2	4.6
Service-ability	4.4	3.7	3.7	3.9
Reputation	3.6	3.6	3.6	3.6
Full-Service Vendor	2.6	2.4	2.6	2.5
Business Relationship	3.1	3.0	2.9	3.0
Terms and Conditions	3.7	3.1	2.8	3.2
Latest Technology	3.8	3.6	3.2	3.5

Key: 1 = Low importance, 5 = High importance

Comments

- Ratings of 4.0 or higher indicate a high degree of importance
- Criteria receiving ratings under 3.0 can generally be ignored

* Unweighted average

EXHIBIT III-7

Processing Services/Systems Operations Vendors 1990 External Spending As a Percent of Revenues

Spending Category	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
Computer Systems	0.9	6.1	5.7	4.2
Software Products	0.6	1.5	0.5	0.9
Professional Services	0.4	0.6	1.7	0.9
Other	1.2	3.5	3.7	2.8
Total External Spending	3.2	11.7	11.6	8.8

Companies Interviewed: 20
Note: Sum of individual entries may not total due to rounding
* Unweighted average

EXHIBIT III-8

Processing Services/Systems Operations Vendors Percent Change in Outside Spending (Total)

Period	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
1989 to 1990	+4.1	+12.0	+3.7	+6.6
1990 to 1991	-26.7	-14.0	-0.7	-13.8

* Unweighted average

EXHIBIT III-9

Processing Services/Systems Operations Vendors Acquisition Criteria Rating

Criteria	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
Price	4.3	3.7	3.8	3.9
Features/ Qualifications	4.2	4.8	4.8	4.6
Delivery Time	3.3	2.8	3.1	3.1
Reliability	4.2	4.2	4.3	4.2
Service-ability	3.5	4.0	4.0	3.8
Reputation	3.3	3.5	3.4	3.4
Full-Service Vendor	3.0	3.3	3.3	3.2
Business Relationship	3.2	3.0	2.4	2.8
Terms and Conditions	3.7	3.3	3.8	3.6
Latest Technology	2.7	4.2	3.0	3.3

Key: 1 = Low importance, 5 = High importance

Comments

- Ratings of 4.0 or higher indicate a high degree of importance
- Criteria receiving ratings under 3.0 can generally be ignored

* Unweighted average

EXHIBIT III-10

Network Services Vendors
1990 External Spending As a Percent of Revenues

Spending Category	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
Computer Systems	3.8	0.9	0.9	1.9
Software Products	0.9	0.5	0.2	0.5
Professional Services	2.4	0.1	0.1	0.9
Other	3.5	0.8	2.5	2.3
Total External Spending	10.6	2.2	3.7	5.6

Companies Interviewed: 21
Note: Sum of individual entries may not total due to rounding
* Unweighted average

EXHIBIT III-11

Network Services Vendors
Percent Change in Outside Spending
(Total)

Period	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
1989 to 1990	+10.0	+3.8	+41.5	+18.3
1990 to 1991	+11.7	-2.6	-17.9	-2.9

* Unweighted average

EXHIBIT III-12

Network Services Vendors Acquisition Criteria Rating

Criteria	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
Price	4.1	3.7	4.1	4.0
Features/ Qualifications	5.0	4.0	4.8	4.6
Delivery Time	2.9	3.5	2.8	3.1
Reliability	4.7	3.8	4.6	4.4
Service-ability	4.3	3.2	3.9	3.8
Reputation	3.1	3.0	3.1	3.1
Full-Service Vendor	2.6	2.7	2.0	2.4
Business Relationship	2.6	2.0	2.8	2.5
Terms and Conditions	3.1	2.7	4.3	3.4
Latest Technology	4.0	3.3	3.0	3.4

Key: 1 = Low importance, 5 = High importance

Comments

- Ratings of 4.0 or higher indicate a high degree of importance
- Criteria receiving ratings under 3.0 can generally be ignored

* Unweighted average

EXHIBIT III-13

Turnkey Vendors
1990 External Spending As a Percent of Revenues

Spending Category	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
Computer Systems	2.9	1.8	0.5	1.7
Software Products	3.4	0.3	0.1	1.3
Professional Services	1.1	0.3	0.1	0.5
Other	3.0	2.2	0.7	2.0
Total External Spending	10.4	4.6	1.4	5.5

Companies Interviewed: 28
* Unweighted average

EXHIBIT III-14

Turnkey Vendors
Percent Change in Outside Spending
(Total)

Period	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
1989 to 1990	+8.5	+11.3	+22.0	+13.9
1990 to 1991	-0.1	-1.9	-15.0	-5.7

* Unweighted average

EXHIBIT III-15

Turnkey Vendors Acquisition Criteria Rating

Criteria	Company Size			
	$1-20MM	$20-100MM	Over $100MM	Average*
Price	4.0	4.1	4.2	4.1
Features/ Qualifications	4.4	4.3	4.2	4.3
Delivery Time	3.0	3.4	2.8	3.1
Reliability	4.4	4.9	4.8	4.7
Service-ability	3.7	4.4	4.0	4.0
Reputation	3.3	3.5	3.6	3.5
Full-Service Vendor	2.8	3.4	2.2	2.8
Business Relationship	3.4	2.7	3.8	3.3
Terms and Conditions	3.4	3.5	4.0	3.6
Latest Technology	3.9	3.5	4.2	3.9

Key: 1 = Low importance, 5 = High importance

Comments

- Ratings of 4.0 or higher indicate a high degree of importance
- Criteria receiving ratings under 3.0 can generally be ignored

* Unweighted average

IV

Interviews: Quantitative Detail

Interviews: Quantitative Detail

This chapter contains the quantitative detail for the principal questions for each interview. Each exhibit follows the same format:

- Each company interviewed with a vendor type/size category is allotted a column.
- The first group of entries (under "field category 1A") are the spending details in millions of dollars.
- The next group ("ID") shows the rate of change in spending experienced or expected (e.g., 0.1 = 10% increase; -0.1 = 10% decrease).
- Entries under "2E" are the ratings given for each acquisition criterion.
- Entries under "7B Revenue" are for 1990 revenue; INPUT checked this entry and revised where necessary, since some of the internal staff interviewed did not always have the appropriate revenue figure available.
- The last group of data, at the bottom of each page under "1A", are the percent of revenue calculations.
- The right-most column in each exhibit contains the averages for that cell.

The exhibits in this chapter are arranged as follows:

	Vendor Size (Revenues)		
Vendor Type	$1-20MM	$20-100MM	Over $100MM
Software Products	IV-1	IV-2	IV-3
Professional Services/ Systems Integration	IV-4	IV-5	IV-6
Processing Services/ Systems Operations	IV-7	IV-8	IV-9
Network Services	IV-10	IV-11	IV-12
Turnkey	IV-13	IV-14	IV-15

FIELD	ARIES	CINCOM	COLUMBINEA/E	MICRODATALEX	CAELUS	COGNITIVE	1001	ARKANSAS	AVATAR	APX	BEALL	GIFF.FONGPROFITKEYPROMOD	SAYLOR'S	AUTOMATIX
CATEGORY	I A	I A	I A	I A	I A	I A	I A	I A	I A	I A	I A	I A	I A	I A
1A														
COMPUTER SYS	0.11	0.7984	0.0525	0.035	0.0107	0.035	0.15	0.0588	0.09	0.045	0.02	0.075	0.06	0.06	
MAINFRAME		0.744													
MIDRANGE	0.08	0.054	0.05	0.02			0.06		0.07	0.03		0.035		0.06	
PC/WKSTATION	0.03	0.0004	0.0025	0.015	0.0107	0.035	0.09	0.0588	0.02	0.015	0.02	0.075	0.025		
COMMUNICATIONS	0.002	0.114	0.009	0.0045	0.001	0.005		0.0007	0.002			0.005			0.001
SOFTWARE PROD.			0.011	0.0105	0.007		0.008	0.0005	0.01		0.012	0.045	0.007		
SYSTEMS S/W			0.011	0.0005	0.002		0.002		0.01		0.002	0.02			
APPLICATIONS				0.01	0.005		0.006	0.0005			0.01	0.025	0.007		
TURNKEY SYS															
TELECOMM - CARRIERS					0.002	0.085			0.01	0.0012		0.015			
OTHER NTWK BASED					0.001										
PROF SVCS	0.065				0.002	0.35				0.18			0.002		0.012
H/W MAINT.	0.006	0.35	0.032	0.0027	0.0034	0.075	0.012		0.02		0.004		0.0003		0.011
OTHER PROD/SVCS										0.5				0.19	0.0036
TOTAL	0.183	1.2624	0.1045	0.0527	0.0271	0.55	0.17	0.06	0.132	0.7262	0.036	0.14	0.067	0.0023	0.25	0.0276
1D															
'89-'90	0.5	0.05	0.1		0.1	-0.1	-0.5	1	0	0.3	0.04	0	-0.15	0.06	-0.9	-0.5	0.1
'90-'91		0.03	-0.15	0.1	0.15		0	0		0.2	-0.04	0	0.15		0	-0.7	0.05
2E															
PRICE	3	5	5	5	4	4	5	4	3	4	1	4	4	3	4	1	5
FEATURES	5	4	4	4	5	5	5	3	5	4	5	5	4	3	5	5	3
DEL. TIMES	3	3	3	4	4	2	3	4	3	3	3	3	2	4	3	3	5
PROD. RELIABIL	4	5	4	4	5	4	5	5	5	5	5	5	3	5	4	5	2
SERVICEABILITY	5	5	3	4	3	3	4	4	4	4	3	4	2	5	2	4	1
VNDR REPUTATIO	5	5	2	3	3	3	3	2	4	4	5	4	3	4	2	4	5
FULL SERVICE V	4	5	3	2	2	3	1	3	5	3	1	3	1	4	2	2	2
BUS.RELATIONSH	3	3	4	2	2	1	4	3	3	3	1	2	3	3	3	5	4
CONTRACT T&C	4	5	5	3	4	2	2	3	5	3	2	4	2	2	3	4	2
LATEST TECH.	4	4	4	4	4	4	4	5	4	4	4	4	4	3	3	4	3
OTHER			5														
7B REVENUE	0.25	10	10	5	1.5	10	3.4	7	6.1	10	4	8	10	10	3	10	8.5
1A															
COMPUTER SYS	0.4400	0.0798	0.0053	0.0070	0.0071	0.0035	0.0441	0.0084	0.0148		0.0113	0.0025	0.0075	0.0060		0.0060	
SOFTWARE PROD.			0.0011	0.0021	0.0047		0.0024	0.0001	0.0016			0.0015	0.0045	0.0007			
PROF SVCS	0.2600				0.0013	0.0350					0.0450				0.0007		0.0014
OTHER PROD/SVC	0.0320	0.0464	0.0041	0.0014	0.0049	0.0165	0.0035	0.0001	0.0052		0.1253	0.0005	0.0020	0.0000	0.0001	0.0190	0.0018
EXP/REV	0.7320	0.1262	0.0105	0.0105	0.0181	0.0550	0.0500	0.0086	0.0216		0.1816	0.0045	0.0140	0.0067	0.0008	0.0250	0.0032

FIELD	SUMMARY
CATEGORY	I A
1A	
COMPUTER SYS	0.11431
MAINFRAME	
MIDRANGE	
PC/WKSTATION	
COMMUNICATIONS	
SOFTWARE PROD.	0.01233
SYSTEMS S/W	
APPLICATIONS	
TURNKEY SYS	
TELECOMM - CAR	
OTHER NTWK BA	
PROF SVCS	0.10183
H/W MAINT.	
OTHER PROD/SVC	
TOTAL	0.23693
1D	
'89-'90	0.00625
'90-'91	-0.01615
2E	
PRICE	3.76471
FEATURES	4.35294
DEL. TIMES	3.23529
PROD. RELIABIL	4.41176
SERVICEABILITY	3.52941
VNDR REPUTATIO	3.58824
FULL SERVICE V	2.70588
BUS.RELATIONSH	2.88235
CONTRACT T&C	3.23529
LATEST TECH.	3.88235
OTHER	
7B REVENUE	6.86765
1A	
COMPUTER SYS	0.04595
SOFTWARE PROD.	0.00207
PROF SVCS	0.05724
OTHER PROD/SVC	0.01644
EXP/REV	0.07927

FIELD	1007	1009	1010	1006	1005	1004	1003	1002	ROSS	QUORUM	1008	SUMMARY
CATEGORY	I B	I B	I B	I B	I B	I B	I B	I B	I B	I B	I B	I B
1A												
COMPUTER SYS		0.4	1.915	0.065	0.015	0.6		0.83			1.15	0.71071
MAINFRAME		0.4	1.831		0.015	0.45		0.7			0.9	
MIDRANGE				0.065				0.13				
PC/WKSTATION			0.084			0.15					0.25	
COMMUNICATIONS			0.1			0.1		0.05			0.1	
SOFTWARE PROD.			1.1245	0.032		0.425		0.43			0.672	0.53670
SYSTEMS S/W			1.1245	0.01		0.375		0.4			0.672	
APPLICATIONS				0.022		0.05		0.03				
TURNKEY SYS												
TELECOMM - CAR			0.352								0.45	
OTHER NTWK BA			0.18			0.02		0.15			0.0324	
PROF SVCS			0.1414	0.002	0.025	0.025		0.06			0.014	0.03820
H/W MAINT.			0.3907	0.06		0.19		0.23			0.225	
OTHER PROD/SVC			1.8474				1					
TOTAL	3	1.5	6.051	0.159	0.04	1.36	1.4	1.75			2.6434	1.98927
1D												
'89-'90	0.18		1.95	0.1	0.05	0.2	0.02	0	0.05		0	0.28333
'90-'91	0.15		0.23	0.3	0	0.15	0.05	0	0.03		0.02	0.10333
2E												
PRICE	4	3	5	3	5	3	5	5	3	4	3	3.90909
FEATURES	4	4	5	5	4	4	5	4	5	4	5	4.45455
DEL. TIMES	4	3	3	4	3	3	4	2	1	3	2	2.90909
PROD. RELIABIL	4	5	5	5	5	5	3	3	4	5	5	4.45455
SERVICEABILITY	4	5	5	5	4	4	3	4	5	5	5	4.45455
VNDR REPUTATIO	4	5	3	4	5	3	2	4	4	4	4	3.81818
FULL SERVICE V	4	5	3	4	2	2	2	2	4	4	3	3.18182
BUS.RELATIONSH	4	4	3	2	3	2	2	2	3	2	2	2.63636
CONTRACT T&C	4	4	4	3	3	3	2	4	2	2	2	3.00000
LATEST TECH.	5	5	5	2	3	4	4	3	4	4	3	3.81818
OTHER							1					1.00000
7B REVENUE	40	60	97	40	23	40	26	40	35	30	80	46.45455
1A												
COMPUTER SYS		0.0067	0.0197	0.0016	0.0007	0.0150		0.0208			0.0144	0.01126
SOFTWARE PROD.			0.0116	0.0008		0.0106		0.0108			0.0084	0.00843
PROF SVCS			0.0015	0.0001	0.0011	0.0006		0.0015			0.0002	0.00082
OTHER PROD/SVC	0.0750	0.0183	0.0296	0.0015		0.0077	0.0538	0.0108			0.0101	0.02586
EXP/REV	0.0750	0.0250	0.0624	0.0040	0.0017	0.0340	0.0538	0.0438			0.0330	0.03697

FIELD	1016		1011		1012		1013		1015		1019		1014		1017		1018		SUMMARY
CATEGORY	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I C
1A																			
COMPUTER SYS						4.625		0.65		2.48				0.775				0.7	1.84600
MAINFRAME						4.2													
MIDRANGE						0.425		0.5		0.48				0.65				0.5	
PC/WKSTATION								0.15		2				0.125				0.2	
COMMUNICATIONS								0.05		0.3				0.1				0.025	
SOFTWARE PROD.										0.15				0.075				0.15	0.12500
SYSTEMS S/W										0.1								0.1	
APPLICATIONS										0.05				0.075				0.05	
TURNKEY SYS								0.1											
TELECOMM - CAR										2				0.6				1	
OTHER NTWK BA										0.37				0.06					
PROF SVCS						0.15				0.1								1	0.31250
H/W MAINT.						0.26		0.12		0.3				0.06				0.3	
OTHER PROD/SVC								0											
TOTAL						7		0.92		5.7				1.67				3.175	3.69300
1D																			
'89-'90		0.3				0		-0.25		-0.02		0.1		1.6		0.2		0	0.24125
'90-'91		0.1				0.45		-0.25		-0.05		0.15		1.25				-0.15	0.21429
2E																			
PRICE		2		4		3		3		5		4		2		5		3	3.44444
FEATURES		5		5		5		4		5		5		3		5		4	4.55556
DEL. TIMES		3		2		3		2		3		1		4		3		2	2.55556
PROD. RELIABIL		4		4		5		3		5		4		1		5		4	3.88889
SERVICEABILITY		4		4		5		3		4		4		1		4		3	3.55556
VNDR REPUTATIO		4		4		4		3		5		3		2		4		5	3.77778
FULL SERVICE V		3		2		2		1		1		2		4		3		2	2.22222
BUS.RELATIONSH		3		2		4		5		4		4		3		4		5	3.77778
CONTRACT T&C		2		1		5		3		3		3		4		4		2	3.00000
LATEST TECH.		5		4		5		4		5		3		5		4		1	4.00000
OTHER										5								5	5.00000
7B REVENUE		140		300		140		200		265		160		100		250		150	189.44
1A																			
COMPUTER SYS						0.0330		0.0033		0.0094				0.0078				0.0047	0.01161
SOFTWARE PROD.										0.0006				0.0008				0.0010	0.00077
PROF SVCS						0.0011				0.0004								0.0067	0.00271
OTHER PROD/SVC						0.0159		0.0014		0.0112				0.0082				0.0088	0.00910
EXP/REV						0.0500		0.0046		0.0215				0.0167				0.0212	0.02280

FIELD	CIMFLEX	BERGER&CONUS		ATLANTIC AMER. COM		COMPUDATA		BENDATA		APP. SOL.	APP. DATA		HEURISTIM		1028	ANA MICROXP		EDITE	TELE/SC		GRACON	ITP		COMP.ANAL
CATEGORY	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A	III A
1A																								
COMPUTER SYS		0.02	0.0125	0.02	0.006	0.001	0.04				0.0098	0.02				0.009			0.013	0.006	0.09	0.02		
MAINFRAME																								
MIDRANGE						0.001					0.0068										0.045			
PC/WKSTATION		0.02	0.0125	0.02	0.006		0.04				0.003	0.02				0.009			0.013	0.006	0.045	0.02		
COMMUNICATIONS		0.001				0.0001	0.0006	0.004			0.0002	0.001				0.0005			0.001		0.01	0.01		
SOFTWARE PROD.		0.005		0.005		0.0015	0.002				0.0003	0.002				0.0013			0.001	0.006	0.02	0.002		
SYSTEMS S/W		0.001				0.0015	0.001					0.001				0.0003				0.001	0.01			
APPLICATIONS		0.004		0.005			0.001				0.0003	0.001				0.001			0.001	0.005	0.01	0.002		
TURNKEY SYS																								
TELECOMM - CAR											0.0072					0.0005			0.023					
OTHER NTWK BA																0.0003								
PROF SVCS							0.01				0.022								0.002					
H/W MAINT.				0.01	0.0015	0.0004		0.004			0.0042	0.006							0.002		0.01			
OTHER PROD/SVC																			0.002					
TOTAL		0.026	0.0125	0.035	0.0075	0.003	0.0526	0.008			0.0437	0.029				0.0116			0.044	0.012	0.13	0.032		
1D																								
'89-'90		0	0.1	0	-.5	0	0.35	0			0	-.4			0	0.25			-0.5	-0.5	0.5	0		
'90-'91	0.2	0	0.5	0.25	0		0.35	0			0					0.5			0.25	0.1	0.5	0		
2E																								
PRICE	4	4	4	5	5	4	3	4			5	4			4	5		5	5	4	5	5		
FEATURES	3	4	5	5	5	4	5	5			5	5			4	5		5	4	5	5	5		
DEL. TIMES	4	3	3	4	3	3	2	4			3	4			1	3		5	2	1	3	3		
PROD. RELIABIL	5	5	4	5	5	5	5	5			5	4			4	5		5	4	5	5	5		
SERVICEABILITY	4	5	4	5	5	5	4	5			4	4			4	5		4	4	3	5	4		
VNDR REPUTATIO	3	4	4	4	4	5	4	4			4	3			4	5		2	4	3	4	2		
FULL SERVICE V	2	2	2	3	3	4	3	1			4	3			2	2		5	3	2	3	1		
BUS.RELATIONSH	4	2	3	3	3	5	3	1			4	2			3	3		1	4	5	4	4		
CONTRACT T&C	3	1	3	3	5	4	3	5			4	4			4	4		5	4	3	5	3		
LATEST TECH.	4	3	4	4	3	5	3	3			4	4			3	4		5	4	4	3	4		
OTHER																5								
7B REVENUE	10	5.5	10	11	7	2	0.79	1.25			5	1.5			10	0.4		3	10	1	10	3		
1A																								
COMPUTER SYS		0.0036	0.0013	0.0018	0.0009	0.0005	0.0506				0.0020	0.0133				0.0225			0.0013	0.0060	0.0090	0.0067		
SOFTWARE PROD.		0.0009		0.0005		0.0008	0.0025				0.0001	0.0013				0.0033			0.0001	0.0060	0.0020	0.0007		
PROF SVCS							0.0127				0.0044								0.0002					
OTHER PROD/SVC		0.0002		0.0009	0.0002	0.0003	0.0008	0.0064			0.0023	0.0047				0.0033			0.0028		0.0020	0.0033		
EXP/REV		0.0047	0.0013	0.0032	0.0011	0.0015	0.0666	0.0064			0.0087	0.0193				0.0290			0.0044	0.0120	0.0130	0.0107		

FIELD	1029	BELOW,TOB	SUMMARY
CATEGORY	III A	III A	III A
1A			
COMPUTER SYS	0.006		0.01952
MAINFRAME			
MIDRANGE			
PC/WKSTATION	0.006		
COMMUNICATIONS	0.0005		
SOFTWARE PROD.	0.007	0.008	0.00470
SYSTEMS S/W	0.005	0.008	
APPLICATIONS	0.002		
TURNKEY SYS			
TELECOMM - CAR		0.025	
OTHER NTWK BA			
PROF SVCS	0.001	0.06	0.01900
H/W MAINT.	0.001	0.15	
OTHER PROD/SVC		0.02	
TOTAL	0.0155	0.263	0.04534
1D			
'89-'90	0	0	0.01176
'90-'91	-0.64	-.5	0.13400
2E			
PRICE	5	4	4.42105
FEATURES	5	5	4.68421
DEL. TIMES	3	1	2.89474
PROD. RELIABIL	5	5	4.78947
SERVICEABILITY	4	5	4.36842
VNDR REPUTATIO	4	1	3.57895
FULL SERVICE V	3	1	2.57895
BUS.RELATIONSH	3	1	3.05263
CONTRACT T&C	3	5	3.73684
LATEST TECH.	4	5	3.84211
OTHER			
7B REVENUE	3	3.5	5.15474
1A			
COMPUTER SYS	0.0020		0.00868
SOFTWARE PROD.	0.0023	0.0023	0.00174
PROF SVCS	0.0003	0.0171	0.00695
OTHER PROD/SVC	0.0005	0.0557	0.00595
EXP/REV	0.0052	0.0751	0.01639

FIELD	NET. MGT.	INT. MI	CRLOGICA	KEANE	COMPUSTAF	TECHNALY	SYS.INTEG	SUMMARY
CATEGORY	III B	III B	III B	III B	III B	III B	III B	III B
1A								
COMPUTER SYS	0.0216		0.74	0.361	0.05	0.063		0.24712
MAINFRAME			0.5					
MIDRANGE	0.0216		0.2	0.35		0.058		
PC/WKSTATION			0.04	0.011	0.05	0.005		
COMMUNICATIONS	0.005		0.01		0.001		0.5	
SOFTWARE PROD.	0.01		0.25	0.04	0.026		0.25	0.11520
SYSTEMS S/W	0.008		0.2	0.04	0.006		0.25	
APPLICATIONS	0.002		0.05		0.02			
TURNKEY SYS								
TELECOMM - CAR			0.02				0.3	
OTHER NTWK BA							0.25	
PROF SVCS			0.04		0.003			0.02150
H/W MAINT.	0.008		0.005	0.022	0.012	0.022		
OTHER PROD/SVC							0.35	
TOTAL	0.0446		1.065	0.423	0.092	0.085	17	3.11827
1D								
'89-'90	0.1		0.1	1	0.1	2	0.05	0.55833
'90-'91	0.1		0	0.1	1	-0.25	0.05	0.16667
2E								
PRICE	5	4	3	5	2	4	4	3.85714
FEATURES	4	3	5	4	4	5	5	4.28571
DEL. TIMES	3	3	4	3	3	3	5	3.42857
PROD. RELIABIL	4	4	5	5	5	5	5	4.71429
SERVICEABILITY	2	2	4	5	5	4	4	3.71429
VNDR REPUTATIO	2	3	3	4	5	4	4	3.57143
FULL SERVICE V	1	1	2	3	5	2	3	2.42857
BUS.RELATIONSH	1	1	4	3	4	4	4	3.00000
CONTRACT T&C	2	3	4	4	3	3	3	3.14286
LATEST TECH.	3	3	3	5	3	4	4	3.57143
OTHER								
78 REVENUE	60	60	60	85	60	22	70	59.57143
1A								
COMPUTER SYS	0.0004		0.0123	0.0042	0.0008	0.0029		0.00413
SOFTWARE PROD.	0.0002		0.0042	0.0005	0.0004		0.0036	0.00176
PROF SVCS			0.0007		0.0001			0.00036
OTHER PROD/SVC	0.0002		0.0006	0.0003	0.0002	0.0010	0.2393	0.04026
EXP/REV	0.0007		0.0178	0.0050	0.0015	0.0039	0.2429	0.04529

FIELD	CACI	CAP GEM	AGS COMP.AA		COMP. DAT	1030	AT&T	CSC	CTG	CONTEL	1031	SUMMARY
CATEGORY	III C	III C	III C	III C	III C	III C	III C	III C	III C	III C	III C	III C
1A												
COMPUTER SYS	0.285	0.7	0.1	8.778	0.143	3.5		0.12	0.5		0.45	1.61956
MAINFRAME				7.97	0.013	3						
MIDRANGE	0.125	0.3		0.138		0.1						
PC/WKSTATION	0.16	0.4	0.1	0.67	0.13	0.4		0.12	0.5		0.45	
COMMUNICATIONS		0.15		0.405		0.25		0.002	0.1		0.025	
SOFTWARE PROD.	0.012	0.05	0.013	2.609		0.5		0.15	0		0.065	0.42488
SYSTEMS S/W	0.005		0.013	2.182		0.3					0.015	
APPLICATIONS	0.007	0.05		0.427		0.2		0.15			0.05	
TURNKEY SYS				0.105		0.4		0.04				
TELECOMM - CAR		1.8	0.12	0.912		0.9			0.4		0.13	
OTHER NTWK BA		0.6	0.06	0.003					0.25		0.08	
PROF SVCS		0.4		0.1							0.125	0.20833
H/W MAINT.	0.015	0.1	0.004	0.873		0.6		0.017	0.12		0.012	
OTHER PROD/SVC				0.078				0.006			0.48	
TOTAL	0.312	3.8	0.297	13.863	0.143	6.15		0.335	1.37		1.367	3.07078
1D												
'89-'90		0.3	0.5	0	0	0.2	0	0.37	0.15	0	0.02	0.15400
'90-'91		0.1	0	0	-.05	0.1	0			0.5	0.11	0.10125
2E												
PRICE	5	5	5	4	4	4	4	4	4	2	4	4.09091
FEATURES	5	5	5	5	4	5	5	4	4	1	4	4.27273
DEL. TIMES	4	3	3	4	3	3	4	2	3	1	2	2.90909
PROD. RELIABIL	5	5	4	4	5	5	5	4	4	2	3	4.18182
SERVICEABILITY	4	5	3	3	5	5	4	4	3	1	4	3.72727
VNDR REPUTATIO	4	5	4	3	4	5	4	3	3	1	4	3.63636
FULL SERVICE V	2	3	2	3	3	4	3	2	2	3	2	2.63636
BUS.RELATIONSH	4	2	1	2	4	3	1	4	4	2	5	2.90909
CONTRACT T&C	3	3	1	2	3	4	2	3	3	4	3	2.81818
LATEST TECH.	4	3	1	2	2	4	5	3	4	3	4	3.18182
OTHER							1					0.50000
7B REVENUE	125	225	200	1000	131	250		1500	244	3000	125	680.000
1A												
COMPUTER SYS	0.0023	0.0031	0.0005	0.0088	0.0011	0.0140		0.0001	0.0020		0.0036	0.00394
SOFTWARE PROD.	0.0001	0.0002	0.0001	0.0026		0.0020		0.0001			0.0005	0.00080
PROF SVCS		0.0018		0.0001				0.0000			0.0010	0.00072
OTHER PROD/SVC	0.0001	0.0118	0.0009	0.0024		0.0086		0.0000	0.0036		0.0058	0.00415
EXP/REV	0.0025	0.0169	0.0015	0.0139	0.0011	0.0246		0.0002	0.0056		0.0109	0.00858

FIELD	MANAGESTI		BOONER		ADVANCED		COMPUTIL		1020		DHI COMP	SUMMARY
CATEGORY	II	A	II	A	II	A	II	A	II	A	II A	II A
1A												
COMPUTER SYS	0.012		0.265		0.008		0.0288		0.04		0.19	0.09063
MAINFRAME			0.215				0.0288					
MIDRANGE			0.05		0.005						0.15	
PC/WKSTATION	0.012				0.003				0.04		0.04	
COMMUNICATIONS			0.04		0.0005				0.005		0.01	
SOFTWARE PROD.	0.02		0.26		0.0006		0.035		0.0045		0.001	0.05352
SYSTEMS S/W	0.02		0.26		0.0001		0.025		0.004			
APPLICATIONS					0.0005		0.01		0.0005		0.001	
TURNKEY SYS												
TELECOMM - CAR							0.0075					
OTHER NTWK BA			0.03								0.003	
PROF SVCS	0.04		0.01						0.035			0.02833
H/W MAINT.	0.02		0.15		0.004		0.102		0.15		0.003	
OTHER PROD/SVC			0.02									
TOTAL	0.092		0.775		0.0131		0.1733		0.2345		0.207	0.24915
1D												
'89-'90	0		0		0		0.2		0		0.05	0.04167
'90-'91	-.1				0						-0.8	-0.26667
2E												
PRICE	5		5		4		4		5		3	4.33333
FEATURES	5		4		4		4		4		4	4.16667
DEL. TIMES	5		4		2		3		3		3	3.33333
PROD. RELIABIL	4		4		3		5		4		5	4.16667
SERVICEABILITY	4		3		3		4		3		4	3.50000
VNDR REPUTATIO	5		3		2		4		3		3	3.33333
FULL SERVICE V	5		2		2		3		2		4	3.00000
BUS.RELATIONSH	3		1		4		3		4		4	3.16667
CONTRACT T&C	5		3		3		4		3		4	3.66667
LATEST TECH.	3		1		2		3		2		5	2.66667
OTHER												
7B REVENUE	2.5		10		10		9.5		5		20	9.50000
1A												
COMPUTER SYS	0.0048		0.0265		0.0008		0.0030		0.0080		0.0095	0.00877
SOFTWARE PROD.	0.0080		0.0260		0.0001		0.0037		0.0009		0.0001	0.00645
PROF SVCS	0.0160		0.0010		0.0000		0.0000		0.0070		0.0000	0.00400
OTHER PROD/SVC	0.0080		0.0240		0.0005		0.0115		0.0310		0.0008	0.01263
EXP/REV	0.0368		0.0775		0.0013		0.0182		0.0469		0.0104	0.03185

FIELD	SCS	BRANDON	1022	1021	REUTER	DIGITAL	SUMMARY
CATEGORY	II B	II B	II B	II B	II B	II B	II B
1A							
COMPUTER SYS		0.025	20	0.326		0.275	5.15650
MAINFRAME			20	0.276		0.04	
MIDRANGE				0		0.035	
PC/WKSTATION		0.025		0.05		0.2	
COMMUNICATIONS		0.0005	4	0.077		0.25	
SOFTWARE PROD.		0.0025	5	0.06		0.065	1.28188
SYSTEMS S/W			3	0.06		0.025	
APPLICATIONS		0.0025	2			0.04	
TURNKEY SYS			1			0.01	
TELECOMM - CAR			3	0.18			
OTHER NTWK BA			2.5	0.007			
PROF SVCS			0.8	0.009		0.35	0.38633
H/W MAINT.		0.005	1.5	0.144		0.1	
OTHER PROD/SVC				0.26			
TOTAL		0.033	37.8	1.063	0.15	1.05	8.01920
1D							
'89-'90	0.1	0	0	0		0.5	0.12000
'90-'91	0.1	0	0	-0.5		-0.3	-0.14000
2E							
PRICE	5	3	4	4	2	4	3.66667
FEATURES	5	5	5	4	5	5	4.83333
DEL. TIMES	5	2	2	4	3	1	2.83333
PROD. RELIABIL	4	4	4	3	5	5	4.16667
SERVICEABILITY	4	5	4	3	5	3	4.00000
VNDR REPUTATIO	4	4	4	3	3	3	3.50000
FULL SERVICE V	2	3	4	3	4	4	3.33333
BUS.RELATIONSH	2	2	5	2	4	3	3.00000
CONTRACT T&C	3	3	4	4	4	2	3.33333
LATEST TECH.	4	5	4	3	5	4	4.16667
OTHER			5				5.00000
7B REVENUE	39	34.384	90	25	23	35	41.064
1A							
COMPUTER SYS		0.0007	0.2222	0.0130		0.0079	0.06096
SOFTWARE PROD.		0.0001	0.0556	0.0024		0.0019	0.01497
PROF SVCS			0.0089	0.0004		0.0100	0.00642
OTHER PROD/SVC		0.0002	0.1333	0.0267	0.0065	0.0103	0.03540
EXP/REV		0.0010	0.4200	0.0425	0.0065	0.0300	0.10000

FIELD	AIC	DST	1023	1024	1025	NCR	1027	1026	SUMMARY
CATEGORY	II C	II C	II C	II C	II C	II C	II C	II C	II C
1A									
COMPUTER SYS	0.16	20	15.4	270	0.108			25	55.11133
MAINFRAME		15	15	270	0.108			20	
MIDRANGE	0.06	2						2	
PC/WKSTATION	0.1	3	0.4					3	
COMMUNICATIONS		1	5	46	0.079				
SOFTWARE PROD.		0.5	2.5		0.02				1.00667
SYSTEMS S/W		0.5	2		0.02				
APPLICATIONS			0.5						
TURNKEY SYS								2	
TELECOMM - CAR		7	3		0.02				
OTHER NTWK BA									
PROF SVCS		1	0.2					26	9.06667
H/W MAINT.	0.03	2	1.5	40	0.1				
OTHER PROD/SVC		9.5	2						
TOTAL	0.19	41	29.6	356	0.327			53	80.01950
1D									
'89-'90	0	0.3	-0.1	0.05	0		0	0.01	0.03714
'90-'91	0	-.27	-0.1	0.05	0		0	0	-0.00714
2E									
PRICE	5	3	4	3	5	2	5	3	3.75000
FEATURES	4	4	3	5	5	1	4	4	3.75000
DEL. TIMES	4	3	3	4	3	2	3	3	3.12500
PROD. RELIABIL	4	5	4	5	5	1	5	5	4.25000
SERVICEABILITY	4	4	3	5	5	1	5	5	4.00000
VNDR REPUTATIO	2	3	2	5	5	1	4	5	3.37500
FULL SERVICE V	2	4	3	5	3	2	2	5	3.25000
BUS.RELATIONSH	2	4	1	2	2	3	2	3	2.37500
CONTRACT T&C	4	3	4	4	5	2	3	2	3.37500
LATEST TECH.	4	3	1	5	3	2	2	4	3.00000
OTHER				5		1	5		3.66667
7B REVENUE	100	137	250	3000	140		165	600	627.429
1A									
COMPUTER SYS	0.0016	0.1460	0.0616	0.0900	0.0008			0.0417	0.05694
SOFTWARE PROD.		0.0036	0.0100		0.0001				0.00460
PROF SVCS		0.0073	0.0008					0.0433	0.01714
OTHER PROD/SVC	0.0003	0.1423	0.0460	0.0287	0.0014			0.0033	0.03701
EXP/REV	0.0019	0.2993	0.1184	0.1187	0.0023			0.0883	0.10482

FIELD	1032	GEONET	1033	TRANSETTLOTC AUST		1034	MERCHANT	SUMMARY
CATEGORY	IV A	IV A	IV A	IV A	IV A	IV A	IV A	IV A
1A								
COMPUTER SYS		0.002	0.3	0.51	0.015		0.042	0.17380
MAINFRAME								
MIDRANGE			0.2	0.5				
PC/WKSTATION		0.002	0.1	0.01	0.015		0.042	
COMMUNICATIONS		0.002	0.1	0.06	0.003		0.046	
SOFTWARE PROD.		0.0005	0.053		0.001	0.25		0.07613
SYSTEMS S/W			0.05		0.001	0.25		
APPLICATIONS		0.0005	0.003					
TURNKEY SYS								
TELECOMM - CAR		0.003	0.18	0.2				
OTHER NTWK BA								
PROF SVCS		0.004	0.05					0.02700
H/W MAINT.	0.036		0.0192	0.044	0.0001		0.018	
OTHER PROD/SVC			0.0192					
TOTAL	0.036	0.0115	0.7214	0.814	0.0191	0.25	0.106	0.27971
1D								
'89-'90		-0.5	0.2	0.3	0.5	0	0.1	0.10000
'90-'91	-0.1	0	0.15	0.4	0.25	0		0.11667
2E								
PRICE	4	5	4	3	5	3	5	4.14286
FEATURES	5	5	5	5	5	5	5	5.00000
DEL. TIMES	3	1	3	3	4	3	3	2.85714
PROD. RELIABIL	5	4	5	5	5	5	4	4.71429
SERVICEABILITY	4	3	5	5	5	4	4	4.28571
VNDR REPUTATIO	4	2	4	3	4	1	4	3.14286
FULL SERVICE V	3	1	4	1	4	2	3	2.57143
BUS.RELATIONSH	3	3	2	3	2	2	3	2.57143
CONTRACT T&C	4	1	5	3	3	3	3	3.14286
LATEST TECH.	4	4	5	5	5	3	2	4.00000
OTHER			5					5.00000
7B REVENUE	1	0.1	6	5	1	10	8	4.443
1A								
COMPUTER SYS		0.0200	0.0500	0.1020	0.0150		0.0053	0.03845
SOFTWARE PROD.		0.0050	0.0088		0.0010	0.0250		0.00996
PROF SVCS		0.0400	0.0083					0.02417
OTHER PROD/SVC	0.0360	0.0500	0.0531	0.0608	0.0031		0.0080	0.03516
EXP/REV	0.0360	0.1150	0.1202	0.1628	0.0191	0.0250	0.0133	0.07020

FIELD CATEGORY	SIMPACT IV B	INTERACT IV B	GRAPHNET IV B	1035 IV B	ACXIOM IV B	MAXWELL IV B	SUMMARY IV B
1A							
COMPUTER SYS		2.5	0.06	0.06	1.2	0.045	0.77300
MAINFRAME		2			0.5		
MIDRANGE				0.06	0.5		
PC/WKSTATION		0.5	0.06		0.2	0.045	
COMMUNICATIONS				0.003	0.75		
SOFTWARE PROD.		0.7			0.5	0.005	0.40167
SYSTEMS S/W		0.5			0.2		
APPLICATIONS		0.2			0.3	0.005	
TURNKEY SYS					0.75		
TELECOMM - CAR		0.2					
OTHER NTWK BA							
PROF SVCS						0.025	0.02500
H/W MAINT.			0.07	0.16		0.025	
OTHER PROD/SVC		1					
TOTAL		4.4	0.13	0.223	3.2	0.1	1.61060
1D							
'89-'90	0	0	0.2	0	-0.3	0.33	0.03833
'90-'91	0	0	0.2	0		-0.33	-0.02600
2E							
PRICE	3	4	3	4	4	4	3.66667
FEATURES	2	4	4	5	4	5	4.00000
DEL. TIMES	3	3	5	3	5	2	3.50000
PROD. RELIABIL	1	5	4	4	5	4	3.83333
SERVICEABILITY	1	4	4	5	2	3	3.16667
VNDR REPUTATIO	2	4	2	5	4	1	3.00000
FULL SERVICE V	4	3	5	2	1	1	2.66667
BUS.RELATIONSH	2	3	2	2	1		2.00000
CONTRACT T&C	2	3	2	3	4	2	2.66667
LATEST TECH.	2	3	4	3	4	4	3.33333
OTHER				5			5.00000
7B REVENUE	30	90	55	30	90	25	53.333
1A							
COMPUTER SYS		0.0278	0.0011	0.0020	0.0133	0.0018	0.00920
SOFTWARE PROD.		0.0078			0.0056	0.0002	0.00451
PROF SVCS						0.0010	0.00100
OTHER PROD/SVC		0.0133	0.0013	0.0054	0.0167	0.0010	0.00754
EXP/REV		0.0489	0.0024	0.0074	0.0356	0.0040	0.01965

FIELD	ARBITRON	THOMPSON	GE INFO	DOWTY	1036	3COM	1037	TRT/FDC	SUMMARY
CATEGORY	IV C	IV C	IV C	IV C	IV C	IV C	IV C	IV C	IV C
1A									
COMPUTER SYS	1.23	3.15	0.18	0.27	3	1.25	8	1.1	2.27250
MAINFRAME	1.14				1		6		
MIDRANGE		0.15		0.27		0.25	2	1	
PC/WKSTATION	0.09	3	0.18		2	1		0.1	
COMMUNICATIONS	0.168	0.4			0.3	4	1	0.1	
SOFTWARE PROD.	0.7	0.24	0.45	0.003	0.175	0.6	1.6	0.2	0.49600
SYSTEMS S/W	0.7	0.15	0.2		0.05	0.1	1		
APPLICATIONS		0.09	0.25	0.003	0.125	0.5	0.6	0.2	
TURNKEY SYS			0.18						
TELECOMM - CAR	0.968	7.5		0.1	7			2	
OTHER NTWK BA	0.084				0.1			3	
PROF SVCS		0.1	0.6	0.005	0.05	0.35	1	0.05	0.30786
H/W MAINT.	1.1	0.15	0.5	0.05	0.5	0.108	15	0.15	
OTHER PROD/SVC					0.05				
TOTAL	4.25	11.54	7.5	0.428	11.175	6.308	26.6	6.6	9.30013
1D									
'89-'90	-.2	0.2	0.07	0.5	0.3	0.1	2	0.15	0.41500
'90-'91	-.1		0	0	0.3	0.25	-1.8	0	-0.17857
2E									
PRICE	5	4	5	4	4	4	3	4	4.12500
FEATURES	5	5	5	5	5	5	5	3	4.75000
DEL. TIMES	2	4	4	1	2	3	3	3	2.75000
PROD. RELIABIL	5	5	5	5	4	5	4	4	4.62500
SERVICEABILITY	4	2	5	4	3	5	4	4	3.87500
VNDR REPUTATIO	3	4	4	3	1	4	3	3	3.12500
FULL SERVICE V	1	1	3	2	3	3	1	2	2.00000
BUS.RELATIONSH	4	2	3	4	1	4	1	3	2.75000
CONTRACT T&C	4	4	5	4	5	3	5	4	4.25000
LATEST TECH.	2	4	3	5	3	2	3	2	3.00000
OTHER			5			5			5.00000
7B REVENUE	200	120	475	180	470	400	300	200	293.125
1A									
COMPUTER SYS	0.0062	0.0263	0.0004	0.0015	0.0064	0.0031	0.0267	0.0055	0.00949
SOFTWARE PROD.	0.0035	0.0020	0.0009	0.00002	0.0004	0.0015	0.0053	0.0010	0.00183
PROF SVCS		0.0008	0.0013	0.00003	0.0001	0.0009	0.0033	0.0003	0.00096
OTHER PROD/SVC	0.0116	0.0671	0.0132	0.0008	0.0169	0.0103	0.0533	0.0263	0.02494
EXP/REV	0.0213	0.0962	0.0158	0.0024	0.0238	0.0158	0.0887	0.0330	0.03710

FIELD	1038	ACCUGRAPH NAT'L DISCAD-TEL			1039	EVANS AND		1040	GLOBAL	HABERSHAM JACK HENROST, INC.			PIN-OIR	VOTAN	SPEECH	SUMMARY
CATEGORY	V A	V A	V A	V A	V A	V A	V A	V A	V A	V A	V A	V A	V A	V A	V A	V A
1A																
COMPUTER SYS	0.15		0.0305	0.025	0.0531	0.4	0.4	0.06	0.285	0.02	0.015	0.01			0.3	0.14572
MAINFRAME									0.24							
MIDRANGE	0.1		0.03		0.048	0.2	0.15	0.05				0.007				
PC/WKSTATION	0.05		0.0005	0.025	0.0051	0.2	0.25	0.01	0.045	0.02	0.015	0.003			0.3	
COMMUNICATIONS			0.0005			0.025	0.05				0.01					
SOFTWARE PROD.	0.025	0.027		0.015	0.102954	1.5	0.095				0.02	0.003				0.22349
SYSTEMS S/W				0.005	0.006954	0.5	0.085					0.003				
APPLICATIONS	0.025			0.01	0.096	1	0.01									
TURNKEY SYS											0.005					
TELECOMM - CAR	0.3				0.011389		0.01	0.025		0.01	0.005	0.002	0.03			
OTHER NTWK BA	0.075					0.05					0.004					
PROF SVCS	0.05		0.001	0.015	0.03	0.04	0.15		0.161	0.015				0.02		0.05356
H/W MAINT.	0.05	0.093	0.012	0.005	0.027128	0.175				0.025		0.002				
OTHER PROD/SVC					0.138											
TOTAL	0.65	0.12	0.044	0.06	0.362571	2.19	0.705	0.085	0.75	0.07	0.059	0.017	0.05	0.5		0.40447
1D																
'89-'90	0.05		-.9	0	0.1	0.28	0.1	1		-0.1	0	-0.5	0			0.08455
'90-'91	0.05		0	0	0	0.2	0.1	0		-0.1	0				-0.3	-0.00500
2E																
PRICE	5	3	5	3	4	3	5	4	4	5	5	2	4	4		4.00000
FEATURES	5	4	5	4	5	5	4	5	5	5	4	2	4	4		4.35714
DEL. TIMES	4	3	2	4	2	3	2	3	5	3	1	3	3	4		3.00000
PROD. RELIABIL	5	5	5	5	4	5	3	4	5	5	5	1	5	4		4.35714
SERVICEABILITY	4	4	5	5	4	4	2	3	5	5	4	2	2	3		3.71429
VNDR REPUTATIO	5	4	5	4	3	2	3	3	3	3	3	3	3	2		3.28571
FULL SERVICE V	3	3	5	3	2	3	1	2	5	3	1	4	2	2		2.78571
BUS.RELATIONSH	2	3	5	4	3	1	4	4	5	1	3	5	4	4		3.42857
CONTRACT T&C	4	3	4	4	1	2	2	3	4	5	4	3	5	4		3.42857
LATEST TECH.	4	2	5	4	2	4	4	4	4	3	5	5	4	5		3.92857
OTHER						4										4.00000
7B REVENUE	15	10	2.5	2	1	10	14	6	3	15.2	30	2.5	5	3.5		8.550
1A																
COMPUTER SYS	0.0100		0.0122	0.0125	0.0531	0.0400	0.0286	0.0100	0.0950	0.0013	0.0005	0.0040		0.0857		0.02941
SOFTWARE PROD.	0.0017	0.0027		0.0075	0.1030	0.1500	0.0068				0.0007	0.0012				0.03418
PROF SVCS	0.0033		0.0004	0.0075	0.0300	0.0040	0.0107		0.0537	0.0010	0.0000		0.0040			0.01146
OTHER PROD/SVC	0.0283	0.0093	0.0050	0.0025	0.1765	0.0250	0.0043	0.0042	0.1013	0.0023	0.0008	0.0016	0.0060	0.0571		0.03031
EXP/REV	0.0433	0.0120	0.0176	0.0300	0.3626	0.2190	0.0504	0.0142	0.2500	0.0046	0.0020	0.0068	0.0100	0.1429		0.08323

FIELD	1041		EFF.MGT.		XYVISION		PENTAMAT		IREDSHAW		ITRON		MICRODYN		AGENCY		SUMMARY
CATEGORY	V	B	V	B	V	B	V	B	V	B	V	B	V	B	V	B	V B
1A																	
COMPUTER SYS		1		0.17		0.41		0.008		0.09		0.9				0.1	0.38257
MAINFRAME						0.06											
MIDRANGE		0.5		0.11		0.25				0.04		0.7					
PC/WKSTATION		0.5		0.06		0.1		0.008		0.05		0.2				0.1	
COMMUNICATIONS		0.05		0.015		0.04		0.003		0.005		0.01				0.03	
SOFTWARE PROD.		0.125		0.075		0.1		0.012		0.003		0.35				0.06	0.10357
SYSTEMS S/W		0.05		0.06		0.02		0.007		0.003		0.05				0.03	
APPLICATIONS		0.075		0.015		0.08		0.005				0.3				0.03	
TURNKEY SYS								0.003									
TELECOMM - CAR				0.004				0.01572									
OTHER NTWK BA												0.01					
PROF SVCS		0.1				0.045						0.03					0.05833
H/W MAINT.		0.75		0.045		0.1		0.09		0.015		0.024					
OTHER PROD/SVC																	
TOTAL		2.025		0.309		0.695		0.13172		0.113		1.324		3		0.25	0.98097
1D																	
'89-'90		0		0.2		0.3		0.1		-.5		0.3		0		0	0.11250
'90-'91		-0.3		-0.2		-0.1		0.1		-.1		0.3		0.05		0	-0.01875
2E																	
PRICE		4		3		4		5		5		3		5		4	4.12500
FEATURES		4		5		4		2		5		5		4		5	4.25000
DEL. TIMES		4		2		3		3		5		4		3		3	3.37500
PROD. RELIABIL		4		5		5		5		5		5		5		5	4.87500
SERVICEABILITY		4		4		5		4		5		4		5		4	4.37500
VNDR REPUTATIO		4		3		4		2		4		4		4		3	3.50000
FULL SERVICE V		4		4		5		1		4		3		3		3	3.37500
BUS.RELATIONSH		4		4		3		1		3		3				1	2.71429
CONTRACT T&C		3		4		3		3		5		3		2		5	3.50000
LATEST TECH.		3		3		5		1		4		3		5		4	3.50000
OTHER						5											5.00000
7B REVENUE		12		50		30		30		30		50		30		90	40.250
1A																	
COMPUTER SYS		0.0833		0.0034		0.0137		0.0003		0.0030		0.0180				0.0011	0.01754
SOFTWARE PROD.		0.0104		0.0015		0.0033		0.0004		0.0001		0.0070				0.0007	0.00335
PROF SVCS		0.0083				0.0015						0.0006					0.00348
OTHER PROD/SVC		0.0667		0.0013		0.0047		0.0037		0.0007		0.0009		0.1000		0.0010	0.02236
EXP/REV		0.1688		0.0062		0.0232		0.0044		0.0038		0.0265		0.1000		0.0028	0.04194

FIELD	1042	REYNOLDS	COMP.CONS	HUGHES	SCHLUMBER	SUMMARY
CATEGORY	V C	V C	V C	V C	V C	V C
1A						
COMPUTER SYS	1.5	1.1	0.1	1.02	1.5	1.04400
MAINFRAME	1.5	0.8				
MIDRANGE		0.3	0.1	1	0.75	
PC/WKSTATION				0.02	0.75	
COMMUNICATIONS	0.075		0.2	0.1		
SOFTWARE PROD.	0.06			0.75	0.075	0.29500
SYSTEMS S/W	0.06				0.05	
APPLICATIONS				0.75	0.025	
TURNKEY SYS						
TELECOMM - CAR	0.4	4	0.06	1	0.6	
OTHER NTWK BA					0.2	
PROF SVCS		0.02		0.25	0.05	0.10667
H/W MAINT.		0.55		0.4	0.075	
OTHER PROD/SVC	0.002					
TOTAL	2.037	5.67	0.36	3.52	2.5	2.81740
1D						
'89-'90	0	0.1	0	1	0	0.22000
'90-'91	0.1	0.05	-0.55	-0.35	0	-0.15000
2E						
PRICE	4	4	3	5	5	4.20000
FEATURES	4	4	5	4	4	4.20000
DEL. TIMES	3	2	2	3	4	2.80000
PROD. RELIABIL	5	5	5	4	5	4.80000
SERVICEABILITY	5	5	3	3	4	4.00000
VNDR REPUTATIO	4	3	4	4	3	3.60000
FULL SERVICE V	4	2	2	2	1	2.20000
BUS.RELATIONSH	3	5		4	3	3.75000
CONTRACT T&C	5	4	3	5	3	4.00000
LATEST TECH.	5	4	3	4	5	4.20000
OTHER						
7B REVENUE	1100	260	100	250	100	362.000
1A						
COMPUTER SYS	0.0014	0.0042	0.0010	0.0041	0.0150	0.00513
SOFTWARE PROD.	0.0001			0.0030	0.0008	0.00127
PROF SVCS		0.0001		0.0010	0.0005	0.00053
OTHER PROD/SVC	0.0004	0.0175	0.0026	0.0060	0.0088	0.00706
EXP/REV	0.0019	0.0218	0.0036	0.0141	0.0250	0.01327

Appendixes

Definition of Terms

A

Overall Definitions and Analytical Framework

Information Services - Computer/telecommunications-related products and services that are oriented toward the development or use of information systems. Information services typically involve one or more of the following:

- Processing of specific applications using vendor-provided systems (called **Processing Services**)
- A combination of hardware, packaged software and associated support services which will meet a specific application processing need (called **Turnkey Systems**)
- Packaged software (called **Software Products**)
- People services that support users in developing and operating their own information systems (called **Professional Services**)
- Bundled combinations of products and services where the vendor assumes responsibility for the development of a custom solution to an information system problem (called **Systems Integration**)
- Services that provide operation and management of all or a significant part of a user's information systems functions under a long-term contract (called **Systems Operations**)
- Services associated with the delivery of information in electronic form—typically network-oriented services such as value-added networks, electronic mail and document interchange, on-line data bases, on-line news and data feeds, videotex, etc. (called **Network Services**)

In general, the market for information services does not involve providing equipment to users. The exception is where the equipment is bundled as part of an overall service offering such as a turnkey system, a systems operations contract, or a systems integration project.

The information services market also excludes pure data transport services (i.e., data or voice communications circuits). However, where information transport is associated with a network-based service (e.g., EDI or VAN services), or cannot be feasibly separated from other bundled services (e.g., some systems operations contracts), the transport costs are included as part of the services market.

The analytical framework of the **Information Services Industry** consists of the following interacting factors: overall and industry-specific business environment (trends, events and issues); technology environment; user information system requirements; size and structure of information services markets; vendors and their products, services and revenues; distribution channels, and competitive issues.

All **Information Services Market** forecasts are estimates of **User Expenditures** for information services. When questions arise about the proper place to count these expenditures, INPUT addresses them from the user's viewpoint: expenditures are categorized according to what users perceive they are buying.

By focusing on user expenditures, INPUT avoids two problems which are related to the distribution channels for various categories of services:

- Double counting, which can occur by estimating total vendor revenues when there is significant reselling within the industry (e.g., software sales to turnkey vendors for repackaging and resale to end users)
- Missed counting, which can occur when sales to end users go through indirect channels such as mail order retailers

Market Sectors or markets, are groupings or categories of the users who purchase information services. There are three types of user markets:

- *Vertical Industry* markets, such as Banking, Transportation, Utilities, etc.
- *Functional Application* markets, such as Human Resources, Accounting, etc. These are also called "Cross-Industry" markets.
- *Generic* markets, which are neither industry- nor application-specific, such as the market for systems software.

Specific market sectors used by INPUT are defined in Section D, below.

Captive Information Services User Expenditures are expenditures for products and services provided by a vendor that is part of the same parent corporation as the user. These expenditures are not included in INPUT forecasts.

Non-captive Information Services User Expenditures are expenditures that go to vendors which have a different parent corporation than the user. It is these expenditures which constitute the information services market.

Delivery Modes are defined as specific products and services that satisfy a given user need. While *Market Sectors* specify *who* the buyer is, *Delivery Modes* specify *what* the user is buying.

Of the eight delivery modes defined by INPUT, five are considered primary products or services:

- *Processing Services*
- *Network Services*
- *Professional Services*
- *Applications Software Products*
- *Systems Software Products*

The remaining three delivery modes represent combinations of these products and services, bundled together with equipment, management and/or other services:

- *Turnkey Systems*
- *Systems Operations*
- *Systems Integration*

Section B describes the delivery modes and their structure in more detail.

Outsourcing is defined as the contracting of information systems (IS) functions to outside vendors. Outsourcing should be viewed as the opposite of *insourcing*: anything that IS management has considered feasible to do internally (e.g., data center operations, applications development and maintenance, network management, training, etc.) is a potential candidate for outsourcing.

IS has always bought systems software, as it is infeasible for companies to develop it internally. However, all other delivery modes represent functions or products that IS management could choose to perform or develop in-house. Viewed this way, outsourcing is the result of a make-or-buy decision, and the outsourcing market covers any product or service where the vendor must compete against the client firm's own internal resources.

B

Industry Structure and Delivery Modes

1. Service Categories

The following exhibit presents the structure of the information services industry. Several of the delivery modes can be grouped into higher-level **Service Categories**, based on the kind of problem the user needs to solve. These categories are:

- **Business Application Solutions (BAS)** - prepackaged or standard solutions to common business applications. These applications can be either industry-specific (e.g., mortgage loan processing for a bank), cross-industry (e.g., payroll processing), or generic (e.g., utility timesharing). In general, BAS services involve minimal customization by the vendor, and allow the user to handle a specific business application without having to develop or acquire a custom system or system resources. The following delivery modes are included under BAS:

  - *Processing Services*
  - *Applications Software Products*
  - *Turnkey Systems*

- **Systems Management Services (SMS)** - services which assist users in developing systems or operating/managing the information systems function. Two key elements of SMS are the customization of the service to each individual user and/or project, and the potential for the vendor to assume significant responsibility for management of at least a portion of the user's information systems function. The following delivery modes are included under SMS:

  - *Systems Operations*
  - *Systems Integration*

Each of the remaining three delivery modes represents a separate service category:

- *Professional Services*
- *Network Services*
- *System Software Products*

Note: These service categories are a new concept introduced in the 1990 MAP Program. They are purely an aggregation of lower level delivery mode data. They do not change the underlying delivery modes or industry structure.

Information Services Industry Structure—1990

Source: INPUT

2. Software Products

There are many similarities between the applications and systems software delivery modes. Both involve user purchases of software packages for in-house computer systems. Included are both lease and purchase expenditures, as well as expenditures for work performed by the vendor to implement or maintain the package at the user's sites. Vendor-provided training or support in operation and use of the package, if bundled in the software pricing, is also included here.

Expenditures for work performed by organizations other than the package vendor are counted in the category of professional services. Fees for work related to education, consulting, and/or custom modification of software products are counted as professional services, provided such fees are charged separately from the price of the software product itself.

- **Systems Software Products**

  Systems software products enable the computer/communications system to perform basic machine-oriented or user interface functions. These products include:

  - *Systems Control Products* - Software programs that function during application program execution to manage computer system resources and control the execution of the application program. These products include operating systems, emulators, network control, library control, windowing, access control, and spoolers.

  - *Operations Management Tools* - Software programs used by operations personnel to manage the computer system and/or network resources and personnel more effectively. Included are performance measurement, job accounting, computer operation scheduling, disk management utilities, and capacity management.

  - *Applications Development Tools* - Software programs used to prepare applications for execution by assisting in designing, programming, testing, and related functions. Included are traditional programming languages, 4GLs, data dictionaries, data base management systems, report writers, project control systems, CASE systems and other development productivity aids. Also included are system utilities (e.g., sorts) which are directly invoked by an applications program.

- **Applications Software Products**

  - *Industry-Specific Applications Software Products* - Software products that perform functions related to solving business or organizational needs unique to a specific vertical market and sold to that market

only. Examples include demand deposit accounting, MRPII, medical recordkeeping, automobile dealer parts inventory, etc.

- *Cross-Industry Applications Software Products* - Software products that perform a specific function that is applicable to a wide range of industry sectors. Applications include payroll and human resource systems, accounting systems, word processing and graphics systems, spreadsheets, etc.

3. Turnkey Systems

A turnkey system is an integration of equipment (CPU, peripherals, etc.), systems software, and packaged or custom application software into a single system developed to meet a specific set of user requirements. Value added by the turnkey system vendor is primarily in the software and support services provided. Most CAD/CAM systems and many small business systems are turnkey systems. Turnkey systems utilize standard computers and do not include specialized hardware such as word processors, cash registers, process control systems, or embedded computer systems for military applications.

Hardware vendors that combine software with their own general-purpose hardware are not classified by INPUT as turnkey vendors. Their software revenues are included the appropriate software category.

Most turnkey systems are sold through channels known as value-added resellers.

- *Value-Added Reseller (VAR):* A VAR adds value to computer hardware and/or software and then resells it to an end user. The major value added is usually application software for a vertical or cross-industry market, but also includes many of the other components of a turnkey systems solution, such as professional services.

Turnkey systems are divided into two categories.

- *Industry-Specific Systems* - systems that serve a specific function for a given industry sector, such as automobile dealer parts inventory, medical recordkeeping, or discrete manufacturing control systems.

- *Cross-Industry Systems* - systems that provide a specific function that is applicable to a wide range of industry sectors, such as financial planning systems, payroll systems, or personnel management systems.

4. Processing Services

This category includes transaction processing, utility processing, and other processing services.

- *Transaction Processing:* Client uses vendor-provided information systems—including hardware, software and/or data networks—at vendor site or customer site, to process transactions and update client data bases. Transactions may be entered in one of four modes:

  - *Interactive* - Characterized by the interaction of the user with the system for data entry, transaction processing, problem solving and report preparation: the user is on-line to the programs/files stored on the vendor's system.

  - *Remote Batch* - Where the user transmits batches of transaction data to the vendor's system, allowing the vendor to schedule job execution according to overall client priorities and resource requirements.

  - *Distributed Services* - Where users maintain portions of an application data base and enter or process some transaction data at their own site, while also being connected through communications networks to the vendor's central systems for processing other parts of the application.

  - *Carry-in Batch* - Where users physically deliver work to a processing services vendor.

- *Utility Processing*: Vendor provides basic software tools (language compilers, assemblers, DBMSs, graphics packages, mathematical models, scientific library routines, etc.), generic applications programs and or data bases, enabling clients to develop their own programs or process data on vendor's system.

- *Other Processing Services*: Vendor provides services—usually at vendor site—such as scanning and other data entry services, laser printing, computer output microfilm (COM), CD preparation and other data output services, backup and disaster recovery, etc.

5. Systems Operations (SO)

Systems operations involves the operation and management of all or a significant part of the user's information systems functions under a long-term contract. These services can be provided in either of two distinct submodes:

- *Professional Services:* The vendor provides personnel to operate client-supplied equipment. Prior to 1990, this was a submode of the Professional Services delivery mode.

- *Processing Services:* The vendor provides personnel, equipment and (optionally) facilities. Prior to 1990, this was a submode of the Processing Services delivery mode.

In the federal government market the processing services submode is called "COCO" (Contractor-Owned, Contractor-Operated), and the professional services mode is referred to as "GOCO" (Government-Owned, Contractor-Operated).

Systems operations vendors now provide a wide variety of services in support of existing information systems. The vendor can plan, control, provide, operate, maintain and manage any or all components of the user's information systems (equipment, networks, systems and/or application software), either at the client's site or the vendor's site. Systems operations can also be referred to as "resource management" or "facilities management."

There are two general levels of systems operations:

- *Platform/network operations* - where the vendor operates the computer system and/or network without taking responsibility for the applications
- *Application operations* - where the vendor takes responsibility for the complete system, including equipment, associated telecommunications networks, and applications software

Note: Systems Operations is a new delivery mode introduced in the 1990 MAP Program. It was created by taking the Systems Operations submode out of both Processing Services and Professional Services. No other change has been made to the delivery mode definitions, and the total forecast expenditures for these three delivery modes are identical to the total forecast expenditures of the two original modes before the breakout of Systems Operations.

6. Systems Integration (SI)

Systems integration is a business offering that provides a complete solution to an information system, networking or automation requirement through the custom selection and implementation of a variety of information system products and services. A systems integrator is responsible for the overall management of a systems integration contract and is the single point of contact and responsibility to the buyer for the delivery of the specified system function, on schedule and at the contracted price.

To be included in the information services market, systems integration projects must involve some application processing component. In addition, the majority of cost must be associated with information systems products and/or services.

The systems integrator will perform, or manage others who perform, most or all of the following functions:

- Program management, including subcontractor management
- Needs analysis
- Specification development
- Conceptual and detailed systems design and architecture
- System component selection, modification, integration and customization
- Custom software design and development
- Custom hardware design and development
- Systems implementation, including testing, conversion and post-implementation evaluation and tuning
- Life cycle support, including
  - System documentation and user training
  - Systems operations during development
  - Systems maintenance
- Financing

7. Professional Services

This category includes consulting, education and training, and software development.

- *Consulting:* Services include management consulting (related to information systems), information systems consulting, feasibility analysis and cost-effectiveness studies, and project management assistance. Services may be related to any aspect of information systems, including equipment, software, networks and systems operations.
- *Education and Training:* Products and services related to information systems and services for the professional and end user, including computer-aided instruction, computer-based education, and vendor instruction of user personnel in operations, design, programming, and documentation.
- *Software Development:* Services include user requirements definition, systems design, contract programming, documentation and implementation of software performed on a custom basis. Conversion and maintenance services are also included.

8. Network Services

Network services typically include a wide variety of network-based functions and operations. Their common thread is that most of these functions could not be performed without network involvement. Network services is divided into two major segments: *Electronic Information Services,* which involve selling information to the user, and *Network Applications,* which involve providing some form of enhanced transport service in support of a user's information processing needs.

- *Electronic Information Services*

  Electronic information services are data bases that provide specific information via terminal- or computer-based inquiry, including items such as stock prices, legal precedents, economic indicators, periodical literature, medical diagnosis, airline schedules, automobile valuations, etc. The terminals used may be computers themselves, such as communications servers or personal computers. Users typically inquire into and extract information from the data bases. Although users may load extracted data into their own computer systems, the electronic information vendor provides no data processing or manipulation capability and the users cannot update the vendor's data bases.

  The two kinds of electronic information services are:

  - *On-line Data Bases* - Structured, primarily numerical data on economic and demographic trends, financial instruments, companies, products, materials, etc.

  - *News Services* - Unstructured, primarily textual information on people, companies, events, etc.

  While electronic information services have traditionally been delivered via networks, there is a growing trend toward the use of CD ROM optical disks to support or supplant on-line services, and these optical disk-based systems are included in the definition of this delivery mode.

- *Network Applications*

  - *Value-Added Network Services (VAN Services)* - VAN services are enhanced transport services which involve adding such functions as automatic error detection and correction, protocol conversion, and store-and-forward message switching to the provision of basic network circuits.

    While VAN services were originally provided only by specialized VAN carriers (Tymnet, Telenet, etc.), today these services are also offered by traditional common carriers (AT&T, Sprint, etc.). Mean-

while, the VAN carriers have also branched into the traditional common carriers' markets and are offering unenhanced basic network circuits as well.

INPUT's market definition covers VAN services only, but includes the VAN revenues of all types of carriers.

- *Electronic Data Interchange (EDI)* - Application-to-application exchange of standardized business documents between trade partners or facilitators. This exchange is commonly performed using VAN services. Specialized translation software is typically employed to convert data from organizations' internal file formats to EDI interchange standards; this software may be provided as part of the VAN service, or may be resident on the organization's own computers.

- *Electronic Information Exchange (EIE)* - Also known as Electronic Mail (E-Mail), EIE involves the transmission of messages across an electronic network managed by a services vendor, including facsimile transmission (FAX), voice mail, voice messaging, and access to Telex, TWX, and other messaging services. This also includes bulletin board services.

- *Other Network Services* - This segment contains videotex and pure network management services. Videotex is actually more a delivery mode than an application. Its prime focus is on the individual as a consumer or in business. These services provide interactive access to data bases and offer the inquirer the capability to send as well as receive information for such purposes as home shopping, home banking, travel reservations, and more.

  Network management services included here must involve the vendor's network and network management systems as well as people. People-only services, or services that involve the management of networks as part of the broader task of managing a user's information processing functions are included in Systems Operations.

C

Vendor Revenue and User Expenditure Conversion

The size of the information services market may be viewed from two perspectives: vendor (producer) revenues, and user expenditures. While the primary data for INPUT's research is vendor interviews, INPUT defines and forecasts the information services market in terms of end-user expenditures. End-user expenditures reflect the markup in producer sales when a product such as software is delivered through indirect distribution channels, such as original equipment manufacturers (OEMs), retailers and distributors. The focus on end-user expenditure also eliminates the double counting of revenues which would occur if sales were tabulated for both producer (e.g., Lotus) and distributor (e.g., BusinessLand).

For most delivery modes, vendor revenues and user expenditures are fairly close. However, there are some significant areas of difference. Many microcomputer software products, for example, are marketed through indirect distribution channels. To capture the valued added through these indirect distribution channels, adjustment factors which incorporate industry discount ratios are used to convert estimated information services vendor revenues to end-user expenditures.

For some delivery modes, including software products, systems integration and turnkey systems, there is a significant volume of intra-industry sales. For example, systems integrators purchase software and subcontract the services of other professional services vendors. And turnkey vendors incorporate purchased software into the systems which they sell to end users.

To account for such intra-industry transactions, INPUT uses other conversion ratios to derive the estimate of end-user expenditures.

The following table summarizes the net effect of the various ratios used by INPUT to convert vendor revenues to end-user expenditure (market size) figures for each delivery mode:

Delivery Mode	Vendor Revenue Multiplier
Application Software Products	1.18
Systems Software Products	1.10
Systems Operations	1.00
Systems Integration	0.99
Professional Services	0.99
Network Services	0.99
Processing Services	0.99
Turnkey Systems	0.95

D

Sector Definitions and Delivery Mode Reporting

1. Industry Sector Definitions (Vertical Markets)

INPUT has structured the information services market into 16 generic industry sectors, such as process manufacturing, insurance, transportation, etc. The definitions of these sectors are based on the 1987 revision of the Standard Industrial Classification (SIC) Code system. The specific industries (and their SIC Codes) included under these generic industry sectors are detailed in the attached table.

EXHIBIT A-2

Industry Sector Definitions

Industry Sector	SIC Code	Description
Discrete Manufacturing	23xx	Apparel and other finished products
	25xx	Furniture and fixtures
	27xx	Printing, publishing and allied industries
	31xx	Leather and leather products
	34xx	Fabricated metal products, except machinery and transportation equipment
	35xx	Industrial and commercial machinery and computer equipment
	36xx	Electronic and other electrical equipment and components, except computer equipment
	37xx	Transportation equipment
	38xx	Instruments; photo/med/optical goods; watches/clocks
	39xx	Miscellaneous manufacturing industry
Process Manufacturing	10xx	Metal mining
	12xx	Coal mining
	13xx	Oil and gas extraction
	14xx	Mining/quarrying nonmetalic minerals
	20xx	Food and kindred products
	21xx	Tobacco products
	22xx	Textile mill products
	24xx	Lumber and wood products, except furniture
	26xx	Paper and allied products
	28xx	Chemicals and allied products
	29xx	Petroleum refining and related industries
	30xx	Rubber and miscellaneous plastic products
	32xx	Stone, clay, glass and concrete products
	33xx	Primary metal industries
Transportation Services	40xx	Railroad transport
	41xx	Public transit/transport
	42xx	Motor freight transport/warehousing
	43xx	U.S. Postal Service
	44xx	Water transportation
	45xx	Air transportation (except airline reservation services in 4512)
	46xx	Pipelines, except natural gas
	47xx	Transportation services (except 472x, arrangement of passenger transportation)

EXHIBIT A-2 (Cont.)

Industry Sector Definitions

Industry Sector	SIC Code	Description
Utilities	49xx	Electric, gas and sanitary services
Telecommunications	48xx	Communications
Retail Distribution	52xx	Building materials
	53xx	General merchandise stores
	54xx	Food stores
	55xx	Automotive dealers, gas stations
	56xx	Apparel and accessory stores
	57xx	Home furniture, furnishings and accessory stores
	58xx	Eating and drinking places
	59xx	Miscellaneous retail
Wholesale Distribution	50xx	Wholesale trade - durable goods
	51xx	Wholesale trade - nondurable goods
Banking and Finance	60xx	Depositary institutions
	61xx	Nondepositary institutions
	62xx	Security and commodity brokers, dealers, exchanges and services
	67xx	Holding and other investment offices
Insurance	63xx	Insurance carriers
	64xx	Insurance agents, brokers and services
Health Services	80xx	Health services
Education	82xx	Educational services

EXHIBIT A-2 (Cont.)

Industry Sector Definitions

Industry Sector	SIC Code	Description
Business and Technical Services	65xx	Real estate
	73xx	Business services (except hotel reservation services in 7389)
	81xx	Legal services
	87xx	Engineering, accounting, research, management, and related services
	89xx	Miscellaneous services
Federal Government	9xxx	
State and Local Government	9xxx	
Miscellaneous Industries	01xx	Agricultural production - crops
	02xx	Agricultural production - livestock/animals
	07xx	Agricultural services
	08xx	Forestry
	09xx	Fishing, hunting and trapping
	15xx	Building construction - general contractors, operative builders
	16xx	Heavy construction - contractors
	17xx	Construction - special trade contractors
Personal/Consumer Services	4512x	Airline reservation services
	472x	Arrangement of passenger transportation (travel agencies)
	70xx	Hotels, rooming houses, camps, and other lodging places
	72xx	Personal services
	7389x	Hotel reservation services
	75xx	Automotive repair, services and parking
	76xx	Miscellaneous repair services
	78xx	Motion pictures
	79xx	Amusement and recreation services
	83xx	Social services
	84xx	Museums, art galleries, and botanical/zoological gardens
	86xx	Membership organizations
	88xx	Private households

2. Cross-Industry Sector Definitions (Horizontal Markets)

In addition to these vertical industry sectors, INPUT has also identified seven cross-industry or horizontal market sectors. These sectors or markets involve multi-industry applications such as human resource systems, accounting systems, etc. In order to be included in an industry sector, the service or product delivered must be specific to that sector only. If a service or product is used in more than one industry sector, it is counted as cross-industry. The seven cross-industry markets are:

- *Human Resource Systems*
- *Education and Training*
- *Office Systems*
- *Accounting Systems*
- *Engineering and Scientific Applications*
- *Planning and Analysis Systems*
- *Other Applications (including telemarketing, sales management and electronic publishing)*

3. Delivery Mode Reporting by Sector

The tables below show how market forecasts for individual delivery modes are related to specific market sectors.

Vertical Market Sectors Only

The following delivery modes are reported by industry sector (vertical market) only:

Delivery Mode	Applicable Submodes
• Network Services:	Network Applications
• Systems Operations:	All
• Systems Integration:	All
• Professional Services:	All

This reporting structure is intended to provide expenditures by industry sector. However, it is recognized that many of the services provided are not necessarily specific or unique to any of the individual sectors.

Vertical and Cross-Industry Market Sectors

The following delivery modes are reported by industry sector and cross-industry sector (vertical and horizontal markets):

Delivery Mode	Applicable Submodes
• Processing Services:	Transaction Processing
• Software	Applications
• Turnkey Systems	All

All of these delivery modes represent specific business application solutions.

Vertical and Generic Market Sectors

The following submode is reported both by industry sector (vertical market), and the generic market:

Delivery Mode	Applicable Submodes
• Network Services	Electronic Information Services

While some electronic information is industry-specific (e.g., farm crop reports), much of it is relevant to or may be used by any industry (e.g., data base services such as Dialog).

Generic Market Sectors Only

The following delivery modes are so generic that they are not reported by industry or cross-industry sector (vertical or horizontal market):

Delivery Mode	Applicable Submodes
• Processing Services:	Utility Processing Other Processing
• Software	Systems (All)

B

Questionnaire

Information Services Market

Introduction: INPUT is an international research and consulting firm specializing in the information services industry. We perform many market-based studies analyzing the information services needs of customers. This study is somewhat different in that we are looking at the information services industry itself as a user of computer-related products and services.

We would like to speak with you regarding what computer-related products and services your company uses or may use in the future. This will consist of a telephone interview of approximately 30 minutes. In return for your cooperation, we will send you an executive summary of our findings at no charge.

We are not seeking any proprietary information about your firm. In any event, no information you provide will be publicly associated with you or your firm.

Would now be convenient, or should we set up an appointment?

1a. First of all, what was your approximate spending in 1990 for the following types of outside products and services? Note: This is spending that will show up on your P&L and is not a pass-through to customers. [Enter on "Total" line of list in 1b]

1b. How does this spending break out by the following types of outside products and services [review list below]?

1c. For products: Are these primarily lease or purchase amounts?

Category	$ (1b)	Lease/Purchase (1c)
Computer Systems		
- Mainframe	_____	_____
- Midrange/mini	_____	_____
- PC/workstation	_____	_____
Communications hardware	_____	_____
Software Products		
- Systems software	_____	_____
- Applications software	_____	_____
Turnkey systems	_____	_____
Telecommunication services from telephone carriers	_____	
- Other network-based services	_____	
Professional services (e.g., contract programming)	_____	
Hardware maintenance	_____	
Other products/services (describe)	_____	
TOTAL (1a)	_____	

1d. Approximately how much did your total spending for outside services change from 1989 to 1990?_____ ($ or %) How much do you expect it to change from 1990 to 1991? _____ ($ or %).

1e. Which products and services in the list above do you expect to change at a rate higher or lower than average? Why?

Categories higher than average	Reason

Categories lower than average	Reason

2a. Please describe your firm's general process for acquiring products and services, such as specifying requirements; selecting vendors; approvals required.

2b. Is the process centralized or decentralized?

2c. Is the process different now, because of the economic climate, compared to, say, a year ago?

Yes_____ No_____

2d. Are there other variations in the process? If yes, describe [Prompts: Type of product/service; dollar amounts; technical novelty, etc.].

Yes_____ No_____

2e. The following is a list of acquisition criteria. Please rate the general importance of each one on a scale of 1-5 (5= very important; 1= least important); if there are exceptions, please describe.

Criteria	Rating	Exceptions
Price	_____	_____
Features/qualifications	_____	_____
Delivery times	_____	_____
Product reliability	_____	_____
Serviceability	_____	_____
Vendor reputation	_____	_____
Dealing with a full-service provider	_____	_____
Business relationships (e.g., a business partner)	_____	_____
Contract terms & conditions	_____	_____
Offer latest technology	_____	_____
Other criteria (describe)	_____	_____

_____

3. After a vendor is initially selected, what form does the reselection process take? [Prompts: same as initial process; automatic reselection].

4a. So far, we have not discussed "pass-through" items, that is, where a vendor acquires a product or service for the use of a customer and where the customer receives the invoice. Is this a common practice for your firm?

Yes_____ No_____ (skip to 5a)

4b. In 1990, approximately how much did this spending amount to? $_____

4c. How much did this sort of spending change from 1989 to 1990?_____($ or %)
What do you expect the annual rate of increase to be over the next several years?
_____%

5a. There is yet a third type of activity, where a firm like yours may recommend computer-related products and services which a customer subsequently acquires. Is this a common practice for your firm?

Yes_____ No_____

Why?

5b. If yes, what would you estimate [or guesstimate] the dollar value of your recommendations were in 1990? $_____

6a. About how much of your own business in 1990 represented sales or subcontracts to other firms in the information services industries?_____($/%)

6b. Which of the following types of products or services in the information services industry did you supply? [If multiple, check most important ones below.]

Category	Supplied
Computer Systems	_____
- Mainframe	_____
- Midrange/mini	_____
- PC/workstation	_____
Communications hardware	_____
Software Products	
- Systems software	_____
- Applications software	_____
Turnkey systems	_____
Telecommunication services from telephone carriers	_____
- Other network-based services	_____
Professional services (e.g., contract programming)	_____
Hardware maintenance	_____
Other products/services (describe _____)	_____
TOTAL	_____

6c. Which categories of firms were your main customers? [Check all that apply]

Hardware companies	_____
Software companies	_____
Processing companies	_____
Turnkey companies	_____
Professional services companies	_____
Systems integrators	_____
Other	_____

7a. Finally, I would like some basic information about your firm (or division). Is your operation part of a larger organization?
Yes_____ No_____

If yes, describe and provide 1990 revenues $_____ million

7b. What were the non-captive 1990 revenues for your operations?
$_____ million

7c. What are the principal delivery modes of your information services business? If possible, give percentage breakout.

Delivery mode	(Check)	%	Growth	Entry
Professional Services/ Systems Integration	_____	_____	_____	_____
Software Products	_____	_____	_____	_____
Turnkey Systems	_____	_____	_____	_____
Network-based Services	_____	_____	_____	_____
Processing Services	_____	_____	_____	_____
Systems Operations/ Facilities Management	_____	_____	_____	_____

- If multiple modes: Which ones do you see growing fastest? (check off above) Why?

- Are you planning to enter any new delivery modes?

  Yes_____ No_____

  If yes:
  — Which ones? (check off above)
  — Why?

7d. What vertical markets do you now serve? (If possible, give a percentage breakout.)

Vertical Market	(Check)	%	Growth	Entry
Banking/Brokerage	_____	_____	_____	_____
Insurance	_____	_____	_____	_____
Manufacturing	_____	_____	_____	_____
Medical	_____	_____	_____	_____
Wholesale/Retail	_____	_____	_____	_____
Transportation	_____	_____	_____	_____
Government	_____	_____	_____	_____
Other	_____	_____	_____	_____

- If multiple markets: which ones do you see growing fastest? (check off above)
  Why?

- Are you planning to enter new vertical markets?

  Yes____ No_____

  If yes:
  — Which ones? (check off above)
  — Why?